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ALEJANDRO, RAYMOND	
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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/034,901	CINTRA ET AL.	
	Examiner	Art Unit	
	Raymond Alejandro	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *53,54,56-59,63-65,73 and 76* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *53,54,56-59,63-65,73 and 76* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 March 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This Examiner's action is in reply to applicant's communication dated 11/27/06. Applicant has overcome the 35 USC 112 rejections but not the art rejections. Refer to the above-mentioned amendment for more details in relation to applicant's rebuttal arguments and/or remarks. Therefore, the present claims stand rejected over the previously stated grounds of rejection as set forth infra. Thus, the present application is finally rejected for the reasons of record:

Claim Disposition

1. Claims 55 and 72 have also been cancelled.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 53, 57-59, 63-64 and 76 are rejected under 35 U.S.C. 102(b) as being anticipated by Chu 5582623.

The instant application is directed to a method of making a battery electrode wherein the disclosed inventive concept comprises forming a cathode layer and removing the substrate. Other limitations include the cathode mixture; the substrate material; the current collector; the binder and the continuous process.

As to claim 76 and 63:

Chu discloses methods of fabricating rechargeable positive electrodes (TITLE) including the step of forming the active electrode involving a step of depositing a layer of an electrode mixture on a substrate (COL 7, lines 21-30); and when a slurry is employed to prepare the electrode, a further step of drying is employed to dry the electrode; the slurry may be dried on a substrate (COL 7, lines 32-35); the dried electrode must be first removed from the substrate, and then affixed to a current collector (COL 7, lines 36-40). Chu clearly discloses that after the electrode film is dried, it is peeled away from the substrate and later contacted to a current collector (COL 14, lines 40-45). Chu directly discloses that the dried electrode must be first removed from the substrate, and then affixed to a current collector (COL 7, lines 37-40).

The positive electrode is a composite matrix (a mixture) including active material (COL 10, lines 32-45) and binders (COL 11, l9ines 60-65); and solvents (COL 12, lines 20-30).

EXAMPLE 1 illustrates the making of the positive electrode film comprising mixing the active material, carbon black (*the conducting agent*); a polymeric material (*which may act as the binder*) in a solution (*encompassing the solvent*). *Thus, Chu discloses with sufficient specificity the specific method of making the battery electrode as instantly claimed.*

Chu employs a solvent (COL 12, lines 20-30). **EXAMPLE 1** illustrates the making of the positive electrode film comprising mixing the active material, carbon black (*the conducting agent*); a polymeric material (*which may act as the binder*) in a solution (*encompassing the solvent*).

(***Emphasis added→***) Chu discloses that it should be noted that electrodes of appropriate thickness for low power application may be made by laminating two or more thinner electrodes

(COL 14, lines 27-30). *Thus, not only Chu at once envisages laminating two or more layers, but Chu also provides specific guidance for forming more than one electrode layer as instantly claimed. Thus, Chu's teachings at least do encompass forming a first stack comprising more than one electrode layer regardless of the specific step order.*

Chu discloses methods of fabricating rechargeable positive electrodes (TITLE) including the step of forming the active electrode involving a step of depositing a layer of an electrode mixture on a substrate (COL 7, lines 21-30). (***Emphasis added→***) Chu discloses that it should be noted that electrodes of appropriate thickness for low power application may be made by laminating two or more thinner electrodes (COL 14, lines 27-30). *Thus, not only Chu at once envisages laminating two or more layers, but Chu also provides specific guidance for forming more than one electrode layer as instantly claimed. Thus, Chu's teachings at least do encompass forming a first stack comprising more than one electrode layer regardless of the specific step order.*

Chu employs a solvent (COL 12, lines 20-30). **EXAMPLE 1** illustrates the making of the positive electrode film comprising mixing the active material, carbon black (*the conducting agent*); a polymeric material (*which may act as the binder*) in a solution (*encompassing the solvent*).

As to claim 53:

Chu discloses adding binders (COL 11, lines57-65) and the use of various polymeric materials (COL 10, lines 35-65 & COL 11, lines 33-55). *It is noted that any of these polymeric materials is capable of binding together the electrode components.*

As to claim 57:

Chu discloses that preferred liquid solvents evaporate quickly so that the resulting film dries completely and before the redistribution of the components can occur (COL 12, lines 25-30). *Thus, Chu's teachings encompass removing a portion of the solvent.*

As to claims 58-59:

Disclosed is the addition of conducting agents such as carbon black into the cathode mixture (COL 11, lines 50-57). **EXAMPLE 1** shows the use of carbon black (EXAMPLE 1).

As to claim 64:

Chu directly discloses that the dried electrode must be first removed from the substrate, and then affixed to a current collector (COL 7, lines 37-40).

Thus, the present claims are anticipated.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 54 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu 5582623 as applied to claims 76 above, and further in view of Hamamoto et al 2002/0168576.

Chu is applied, argued and incorporated herein for the reasons above. However, the preceding reference does not expressly disclose the specific binder and solvent; and the specific electrode active material.

As to claims 54, 56:

Hamamoto et al disclose that cathode can be prepared by mixing the cathode active material with a conducting agent, a binder such as polyvinylidene fluoride (PVDF), polytetrafluoroethylene (PTFE); and N-methylpyrrolidone solvent to form a cathode paste which is coated on a collector (*the substrate*) (SECTION 0043, 0044, 0062). **EXAMPLE 1** exemplifies mixing such specific electrode components to form the cathode paste (EXAMPLE 1).

[0043] The cathode can be prepared by mixing the cathode active material with a conductive agent such as acetylene black or carbon black, a binder such as polyvinylidene fluoride (PVDF), polytetrafluoroethylene (PTFE), and N-methylpyrrolidone solvent to form a cathode paste, then coating this cathode paste on a collector such as aluminum foil or a stainless steel lath, drying at 50 to 250° C., followed by compression molding.

[0062] 80% by weight of $LiCoO_2$ (cathode active material), 10% by weight of acetylene black (conductive agent), and 10% by weight of polyvinylidene fluoride (binder) were mixed and diluted by N-methylpyrrolidone to prepare a cathode paste. The paste was coated on an aluminum foil

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to employ the specific the specific binder and solvent of Hamamoto et al to make the battery electrode of Chu because Hamamoto et al teach that battery cathodes can be

prepared by mixing together the cathode active material, conducting aids, solvents and binders. Accordingly, such specific cathode mixture materials are suitable battery electrode components helping to provide a non-aqueous electrolyte battery having satisfactory electric capacity and superior cycle characteristics and storage characteristics.

As far as the specific electrode active material, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific electrode active material of Hamamoto et al in the method (or electrochemical cell) of Chu because Hamamoto et al teach that the specifically claimed electrode active material allows to produce compact, light and high capacity secondary batteries (P0004). Thus, such an electrode active material does increase the capacity of secondary batteries. Thus, one of ordinary skill in the art would have reasonably expected that the advantages discussed in Hamamoto et al would have also been achieved by using such a specific electrode active material in the method (or electrochemical cell) of Chu.

7. Claims 65 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chu 5582623 as applied to claim 76 above.

Chu is applied, argued and incorporated herein for the reasons discussed supra. However, Chu does not expressly disclose producing a second stack of cathode layers.

However, Chu discloses methods of fabricating rechargeable positive electrodes (TITLE) including the step of forming the active electrode involving a step of depositing a layer of an electrode mixture on a substrate (COL 7, lines 21-30). (***Emphasis added→***) Chu discloses that it should be noted that electrodes of appropriate thickness for low power application may be made by laminating two or more thinner electrodes (COL 14, lines 27-30). *Thus, not only Chu at once*

envisages laminating two or more layers, but Chu also provides specific guidance for forming more than one electrode layer as instantly claimed. Thus, Chu's teachings at least do encompass forming a first stack comprising more than one electrode layer regardless of the specific step order.

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to produce a second stack of cathode layers by using the method disclosed by Chu because it has been held that re-arrangement, reversal or duplication of parts is obvious. Succinctly stated, fact that a claimed second stack of cathode layers is structurally re-arranged, reversed or duplicated is not sufficient by itself to patentably distinguish over an otherwise old feature unless there are new or unexpected results as it is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed second stack of cathode layers was significant. In re Japikse 86 USPQ 70. In re Kuhle 188 USPQ 7. In re Gazda 104 USPQ 400. In re Harza 124 USPQ 378. (***Refer to MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale: VI. Reversal, Duplication, OR Rearrangement of Parts***).

8. Claim 73 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chu 5582623.

As to claim 73:

Chu discloses methods of fabricating rechargeable positive electrodes (TITLE) including the step of forming the active electrode involving a step of depositing a layer of an electrode mixture on a substrate (COL 7, lines 21-30); and when a slurry is employed to prepare the electrode, a further step of drying is employed to dry the electrode; the slurry may be dried on a

substrate (COL 7, lines 32-35); the dried electrode must be first removed from the substrate, and then affixed to a current collector (COL 7, lines 36-40). Chu clearly discloses that after the electrode film is dried, it is peeled away from the substrate and later contacted to a current collector (COL 14, lines 40-45).

The positive electrode is a composite matrix (a mixture) including active material (COL 10, lines 32-45) and binders (COL 11, l9ines 60-65); and solvents (COL 12, lines 20-30).

(***Emphasis added→***) Chu further discloses that the exact ordering in which components are added to the slurry is not critical to the invention. In fact, as illustrated in EXAMPLES 18-20, various approaches have been found to work with his invention (COL 12, lines 50-61). In one embodiment, some components are first dissolved and mixed before other components are added; while in another exemplary embodiment, all components except one component are dispersed and dissolved (mixed) before that one component is added. It is further disclosed that components may be added to the slurry sequentially or in a premixed form (i.e. the solid insolubles are mixed before the addition to the slurry) (COL 12, lines 50-61).

EXAMPLE 1 illustrates the making of the positive electrode film comprising mixing the active material, carbon black (*the conducting agent*); a polymeric material (*which may act as the binder*) in a solution (*encompassing the solvent*). *Thus, Chu discloses with sufficient specificity the specific method of making the battery electrode as instantly claimed.*

(***Emphasis added→***) Chu discloses that it should be noted that electrodes of appropriate thickness for low power application may be made by laminating two or more thinner electrodes (COL 14, lines 27-30). *Thus, not only Chu at once envisages laminating two or more layers, but Chu also provides specific guidance for forming more than one electrode layer as instantly*

claimed. Thus, Chu's teachings at least do encompass forming a first stack comprising more than one electrode layer regardless of the specific step order.

Chu disclose a method of making a battery electrode as described above. However, Chu fails to expressly disclose the specific order of blending order as instantly claimed in claim 73.

However, in light of Chu's teachings, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to perform the specific blending order as instantly claimed in claim 73 because Chu itself discloses that the exact ordering in which components are added to the slurry is not critical to the invention. In fact, as illustrated in EXAMPLES 18-20, various approaches have been found to work with his invention (COL 12, lines 50-61). In one embodiment, some components are first dissolved and mixed before other components are added; while in another exemplary embodiment, all components except one component are dispersed and dissolved (mixed) before that one component is added. Chu further discloses that components may be added to the slurry sequentially or in a premixed form (i.e. the solid insolubles are mixed before the addition to the slurry) (COL 12, lines 50-61). Therefore, even though Chu does not expressly disclose the specific blending order, Chu directly exemplifies and shows that various approaches of adding components to form an electrode active material have also been found to work. Thus, Chu's teachings provide a clear instruction to those of ordinary skill in the art that changing or altering the order of adding components to form an electrode active material mixture or blending can be easily performed without critically affecting the electrode active material structure or composition, thereby, it is well within the level of ordinary skill, and consequently, it is prima-facie obvious to do so. *Concerning this matter, it is also noted that change in sequence of adding*

*ingredients has been held to render a prima facie case of obviousness, consequently, it is still contended that reversing the order of the prior art process steps (Ex parte Rubin 128 USPQ 440); selection of any order of performing process steps (In re Burhans 69 USPQ 330); or selection of any order of mixing ingredients (In re Gibson 5USPQ 230) are prima facie obvious in the absence of new or unexpected results (**See MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale: IV. Changes in Sequence of Adding Ingredients)**.*

9. Claims 53, 55, 57-59, 63-64 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu 5582623.

As to claim 76 and 63:

Chu discloses methods of fabricating rechargeable positive electrodes (TITLE) including the step of forming the active electrode involving a step of depositing a layer of an electrode mixture on a substrate (COL 7, lines 21-30); and when a slurry is employed to prepare the electrode, a further step of drying is employed to dry the electrode; the slurry may be dried on a substrate (COL 7, lines 32-35); the dried electrode must be first removed from the substrate, and then affixed to a current collector (COL 7, lines 36-40). Chu clearly discloses that after the electrode film is dried, it is peeled away from the substrate and later contacted to a current collector (COL 14, lines 40-45). Chu directly discloses that the dried electrode must be first removed from the substrate, and then affixed to a current collector (COL 7, lines 37-40).

The positive electrode is a composite matrix (a mixture) including active material (COL 10, lines 32-45) and binders (COL 11, l9ines 60-65); and solvents (COL 12, lines 20-30).

EXAMPLE 1 illustrates the making of the positive electrode film comprising mixing the active material, carbon black (*the conducting agent*); a polymeric material (*which may act as the binder*) in a solution (*encompassing the solvent*). *Thus, Chu discloses with sufficient specificity the specific method of making the battery electrode as instantly claimed.*

Chu employs a solvent (COL 12, lines 20-30). **EXAMPLE 1** illustrates the making of the positive electrode film comprising mixing the active material, carbon black (*the conducting agent*); a polymeric material (*which may act as the binder*) in a solution (*encompassing the solvent*).

(***Emphasis added→***) Chu discloses that it should be noted that electrodes of appropriate thickness for low power application may be made by laminating two or more thinner electrodes (COL 14, lines 27-30). *Thus, not only Chu at once envisages laminating two or more layers, but Chu also provides specific guidance for forming more than one electrode layer as instantly claimed. Thus, Chu's teachings at least do encompass forming a first stack comprising more than one electrode layer regardless of the specific step order.*

Chu discloses methods of fabricating rechargeable positive electrodes (TITLE) including the step of forming the active electrode involving a step of depositing a layer of an electrode mixture on a substrate (COL 7, lines 21-30). (***Emphasis added→***) Chu discloses that it should be noted that electrodes of appropriate thickness for low power application may be made by laminating two or more thinner electrodes (COL 14, lines 27-30). *Thus, not only Chu at once envisages laminating two or more layers, but Chu also provides specific guidance for forming more than one electrode layer as instantly claimed. Thus, Chu's teachings at least do encompass*

forming a first stack comprising more than one electrode layer regardless of the specific step order.

As to claim 53:

Chu discloses adding binders (COL 11, lines57-65) and the use of various polymeric materials (COL 10, lines 35-65 & COL 11, lines 33-55). *It is noted that any of these polymeric materials is capable of binding together the electrode components.*

As to claim 55:

Chu employs a solvent (COL 12, lines 20-30). **EXAMPLE 1** illustrates the making of the positive electrode film comprising mixing the active material, carbon black (*the conducting agent*); a polymeric material (*which may act as the binder*) in a solution (*encompassing the solvent*).

As to claim 57:

Chu discloses that preferred liquid solvents evaporate quickly so that the resulting film dries completely and before the redistribution of the components can occur (COL 12, lines 25-30). *Thus, Chu's teachings encompass removing a portion of the solvent.*

As to claims 58-59:

Disclosed is the addition of conducting agents such as carbon black into the cathode mixture (COL 11, lines 50-57). **EXAMPLE 1** shows the use of carbon black (EXAMPLE 1).

As to claim 64:

Chu directly discloses that the dried electrode must be first removed from the substrate, and then affixed to a current collector (COL 7, lines 37-40).

Chu disclose a method of making a battery electrode as described above. However, Chu fails to expressly disclose the specific order of forming (layering) the second layer.

However, in light of Chu's teachings, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to perform the specific order of forming (layering) the second layer because Chu itself discloses that the exact ordering in which components are added is not critical to the invention. In fact, as illustrated in EXAMPLES 1-20, various approaches have been found to work with his invention (COL 12, lines 50-61). Chu further discloses that components may be added to the slurry sequentially or in a premixed form (COL 12, lines 50-61). Therefore, even though Chu does not expressly disclose the specific order of forming (layering) the second layer, Chu directly exemplifies and shows that various approaches of adding components to form an electrode active material have also been found to work. Thus, Chu's teachings provide a clear instruction to those of ordinary skill in the art that changing or altering the order of adding components to form electrode active material layers can be easily performed without critically affecting the electrode active material structure or composition, thereby, it is well within the level of ordinary skill, and consequently, it is prima-facie obvious to do so. *Concerning this matter, it is also noted that change in sequence of adding ingredients has been held to render a prima facie case of obviousness, consequently, it is still contended that reversing the order of the prior art process steps (Ex parte Rubin 128 USPQ 440); selection of any order of performing process steps (In re Burhans 69 USPQ 330); or selection of any order of mixing ingredients (In re Gibson 5USPQ 230) are prima facie obvious in the absence of new or unexpected results* ***(See MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale: IV. Changes in Sequence of Adding Ingredients).***

Response to Arguments

10. Applicant's arguments filed 11/27/06 have been fully considered but they are still unpersuasive.

11. Applicant's main contention is centered on the assertion that "*Chu does not disclose or suggest layering a first cathode layer that includes no substrate with a second cathode layer that includes no substrate. Chu states that two or more electrodes can be laminated to provide a thicker electrode, but Chu's electrode include a current collector.*" In reply, the examiner contests that applicant is amply mischaracterizing the teachings of the prior art, and even more, assigning specific meanings and/or functions to the features disclosed therein. The examiner has already gone the distance explaining the construction and embodiment of Chu's cathode laminated structure. The examiner has discussed at length the teachings of Chu in the prior office action (See item 20 below). Applicant's characterization of Chu's teachings is incorrect because applicant is equating his substrate to Chu's current collector. In short, Chu's current collector are not the same as applicant's substrate. Simply put, Chu clearly names **both** a substrate and a current collector, and yet further, Chu clearly differentiates a substrate from a current collector. Applicant is assigning new names or new functions to the elements shown by Chu. In other words, applicant is renaming Chu's feature or elements. That is simply the case here.

Any attempt to deviate or misconstrue the meaning or name given to a feature/element in the context of an embodiment or example or teaching of a reference simply diminishes or invalidates what is instantly disclosed by said reference. In that aspect, the examiner does not promote this, and makes no further comments about it.

The examiner wishes to add the following for emphasis only. Chu's cathode layers or cathode stack structure is/are free of substrate(s). Applicant has misidentified Chu's current collector as a substrate. In the context of Chu, a substrate differs from a current collector because they both carry distinct functionalities or have different uses. Consequently, the teachings of Chu satisfy the claimed requirement of having no substrate.

12. As best understood, applicant has advanced the following statement in support of the patentability of the present claims:

"*This statement says that two or more thinner electrodes can be combined to form a thicker electrode. But the thinner electrodes referred to by Chu are not simply layers of a cathode material. Rather, each thinner electrode is the final product including both a layer of a cathode material and a current collector. This is much different from the method covered by claim 76, which requires first layering at least two cathode layers that lack a substrate, such as a current collector, and then bonding a current collector to the resulting stack. This sequence is not disclosed or suggested by Chu.*"

The examiner replies that the present claims, as now amended, do not exclude to have multiple layers of a combination of cathode material and a current collector together. Present claims simply recite that the both the first and second cathode layers do not include a substrate. However, within the context of that specific inventive embodiment of Chu, the teachings of Chu clearly differentiate a substrate from a current collector. Therefore, applicant's statement that "*This is much different from the method covered by claim 76, which requires first layering at least two cathode layers that lack a substrate, such as a current collector...*" in an attempt to equate Chu's current collector to applicant's substrate is incorrect and not accurate. This is

especially true in view of Chu's distinction between a substrate and a current collector within the context of that specific inventive embodiment of Chu.

Certainly, it can be appreciated that Chu does not identify, call or label a substrate as a current collector, or vice-versa. Chu makes it clear that when a substrate is removed or peeled away from the active material, a current collector (that is, another feature) should also be used. Therefore, in that specific inventive embodiment of Chu, a substrate is not a current collector, or a current collector is not a substrate. Since applicant's invention excludes only the substrate but not current collectors in the cathode layers, Chu's invention still reads on applicant's invention. Stated alternatively, Chu contemplates the lamination of a first cathode including first cathode active material and a first current collector (i.e. CAM1-CC1) and a second cathode including a second cathode active material and a second current collector (i.e. CAM2-CC2). Such a lamination results in a stacked cathode structure including a stack of (CAM1-CC1 and CAM2-CC2)$_1$ and at least one current collector bonded to the cathode stack. Thus, it does satisfy the claimed requirement because Chu's laminated cathode structure does not have a substrate as well as because the present claims fail to exclude more than one current collector.

Alternatively, an additional lamination further results in another stacked cathode structure including a stack of (CAM3-CC3 and CAM4-CC4)$_2$. Thereafter, the combination of (CAM1-CC1 and CAM2-CC2)$_1$ with (CAM3-CC3 and CAM4-CC4)$_2$ also meet applicant's limitation of "*bonding a current collector to the cathode stack to provide the electrode*". Thus, it does satisfy the claimed requirement because Chu's laminated cathode structure does not have a substrate as well as because the present claims fail to exclude more current collector. It is also believed that

this alternative fully encompasses the limitation of "*bonding cathode stacks to two sides of a current collector*" as recited in claim 65.

13. Applicant has also advanced that "*Chu also does not disclose or suggest leaving a residual solvent in the cathode layer when the removable substrate is removed...*". In response, it is contended that Chu discloses that preferred liquid solvents evaporate so that the resulting film dries completely and before the redistribution of the components can occur (COL 12, lines 25-30). Thus, Chu's teachings encompass removing a portion of the solvent. It is also contended that a neglectable amount of Chu's solvent may still be present in the cathode layer once the substrate is removed; and such a neglectable amount of Chu's solvent still reads on applicant's claim language broadly requiring to "*remove only a portion of the solvent*". Unless applicant clearly specifies the particular amount of solvent removed from the cathode mixture, it is believed that Chu's invention fully meets the requirement of applicant's claim 55 and 57.

14. Applicant has argued that "Chu does not describe making cathodes from multiple layers of a cathode mixture. Moreover, in any event, Chu does not teach any benefit to using a removable substrate that would motivate a person of ordinary skill in the art to use a removable substrate in connection with making a cathode including multiple layers of cathode active material". In response, the examiner respectfully but strenuously disagrees with applicant's position. In fact, it is positively averred that Chu makes known that it should be noted that electrodes of appropriate thickness for low power application may be made by laminating two or more thinner electrodes (COL 14, lines 27-30). Thus, not only Chu at once envisages laminating two or more layers, but Chu also provides specific guidance for forming more than one electrode layer as instantly claimed and within the scope of applicant's inventive method. Thus, Chu's

teachings at least do encompass forming a first stack comprising more than one electrode layer regardless of the specific step order.

15. On the other hand, assuming for the sake of argument that applicant is not convinced that Chu shows the specific order of removing the substrate and then layering the second layer (a point clearly not conceded by the examiner), it is contended that Chu directly exemplifies and shows that various approaches of adding components to form an electrode active material have also been found to work. Specifically, Chu discloses that the exact ordering in which components are added is not critical to the invention. In fact, as illustrated in EXAMPLES 1-20, various approaches have been found to work with his invention (COL 12, lines 50-61); and Chu further discloses that components may be added to the slurry sequentially or in a premixed form (COL 12, lines 50-61). As a consequence, Chu's teachings provide a clear instruction to those of ordinary skill in the art that changing or altering the order of adding components to form electrode active material layers can be easily performed without critically affecting the electrode active material structure or composition, thereby, it is well within the level of ordinary skill, and consequently, if such a teaching is found not to be fully anticipatory, it does at least set forth a reasonable ground for a prima-facie case of obviousness as also presented supra. *Further concerning this matter, it is also noted that change in sequence of adding ingredients has been held to render a prima facie case of obviousness, consequently, it is still contended that reversing the order of the prior art process steps (Ex parte Rubin 128 USPQ 440); selection of any order of performing process steps (In re Burhans 69 USPQ 330); or selection of any order of mixing ingredients (In re Gibson 5USPQ 230) are prima facie obvious in the absence of new*

*or unexpected results (**See MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale: IV. Changes in Sequence of Adding Ingredients**).*

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond Alejandro
Primary Examiner
Art Unit 1745

RAYMOND ALEJANDRO
PRIMARY EXAMINER